Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1, 4, and 6-7 are pending in the application, with claim 1 being the independent claim. Claim 7 has been withdrawn from consideration. Claims 5 and 8 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. Support for the amendment to claim 1 can be found in previously presented claim 5. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendments and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections of claims 1, 4 and 6 under 35 U.S.C. § 103(a)

Claims 1, 4 and 6 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Galasso et al. (U.S. Pat. No. 4,425,407) in view of Booth et al. (U.S. Pat. No. 5,330,789) and Holko (U.S. Pat. No. 5,021,107). Specifically, the Examiner alleged that Galasso et al. teaches formation of an initial coating layer on the carbon/carbon composite by pack cementation (col. 2, ll. 56-58), and that an additional coating comprising Si powder can be applied (col. 3, ll. 53-55). The Examiner conceded that Galasso et al. does not teach (1) a Si powder applied by spraying on a volatile liquid, (2) production of a Si-SiC layer, or (3) oxidizing Si in the S-SiC layer. However, the Examiner alleged that Booth et al. teaches providing a protective coating on the carbon

substrate with silicon particulate and silicon carbide (col. 2, ll. 65-69 to col. 3, ll. 1-2), and the formation of a SiO_2 to protect the SiC layer (col. 4, ll. 56-68). The Examiner further alleged that Holko teaches use of a volatile carrier to apply powders of interlayer materials, such as silicon. Applicants respectfully traverse.

The Examiner indicated that Galasso et al. teaches formation of an initial coating layer on the carbon/carbon composite by pack cementation, and thus the features of claim 1(a). However, claim 1(a) does not recite this. Likewise, the Office Action indicated that claim 1 includes (a)-(d). However, claim 1 only includes (a)-(c); there is no (d). Based on the totality of the Office Action, Applicants believe that the Examiner inadvertently included (a), and that references to claim 1(b)-(d) should actually refer to claim 1(a)-(c), respectively. Applicants respectfully request clarification of the rejection.

To establish a *prima facie* case of obviousness, the art cited by the Examiner must (1) teach all of the claim limitations; (2) provide a suggestion or motivation to those of ordinary skill in the art to make the claimed composition; and (3) reveal that one of ordinary skill would have a reasonable expectation of success in doing so. *See In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991); *see also* M.P.E.P. § 706.02(j). The United States Supreme Court, in *KSR International vs. Teleflex, Inc.*, 550 U.S. ___, WL 1237837 (April 30, 2007), further clarified the requirements for obviousness analysis under 35 U.S.C. § 103(a). The Court noted that the analysis supporting a rejection under 35 U.S.C. § 103(a) should be made ***explicit***, and that it was "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. KSR did not remove the

legally established requirement that each element of each claim must be taught in the documents cited by the Examiner.

A. The cited documents do not teach oxidizing the Si layer to form an SiO_2 film

Neither Galasso et al., Booth et al., Holko, nor any combination of the three references teach (c) of amended claim 1: oxidizing the Si layer to form an SiO_2 film. The Examiner has conceded that Galasso et al. lacks this feature of claim 1, and has not put forth any evidence that Holko describes this feature. Contrary to the Examiner's allegation, Booth et al. also does not teach oxidation of the Si layer to form the SiO_2 film. Booth et al. discloses a two step conversion coating. See col. 2, ll. 65-69 to col. 3, ll. 1-2. The first step applies a primary coating composed of SiC with finely dispersed Si particles. See, e.g., col. 2, ll. 65-col. 3, ll. 3, and col. 4, ll. 30-33. The second step comprises mixing silicon particulate, silicon carbide particulates, and boron particulates, and then *mixing them with the product of the primary coating step in an inert atmosphere.* See, e.g., col. 3, ll. 4-10; col. 4, ll. 54-57, and col. 4, ll. 66-68 - col. 5, ll. 1-3. Applicants remind the Examiner that the claims are method claims, not composition claims. Thus, the *oxidizing of the Si layer to form an SiO_2 film* must be found in the cited documents. Neither the first step nor the second step of Booth et al. *comprises oxidizing an Si layer to form an SiO_2 film.* The documents cited by the Examiner achieve their compositions using different methods. Thus, even a combination of Galasso et al., Booth et al., and Holko does NOT teach each and every element of claim 1.

Because each and every element of amended claim 1 is not found in the cited documents, and claims 4 and 6 depend from claim 1, claims 1, 4 and 6 cannot be found

obvious in view of the cited documents. Applicants respectfully request that the rejection of claims 1, 4 and 6 under 35 U.S.C. § 103(a) be withdrawn.

B. The cited documents do not teach the heat treating temperature and pressure ranges of claim 1

Amended claim 1 recites the features of previously presented claim 5, i.e., heat-treating at a temperature of 1400 °C to about 1600 °C under a pressure of about 10 mTorr to about 1000 mTorr. The Examiner previously recognized that even a combination of Galasso et al., Booth et al., and Holko did not contain the temperature and pressure ranges of claim 5, since claim 5 was not rejected under 35 U.S.C. § 103(a) in view of Galasso et al., Booth et al., and Holko in the last Office action. Thus, each and every element of claim 1 is not found in the cited documents, either individually or collectively. Applicants respectfully request that the rejection of claims 1, 4 and 6 under 35 U.S.C. § 103(a) in view of Galasso et al., Booth et al., and Holko be withdrawn.

Rejection of claim 5 under 35 U.S.C. § 103(a)

Claim 5 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Galasso et al. in view of Booth et al., Holko, and Hanzawa et al. (U.S. Pub. No. 2001/0051258). Specifically, the Examiner alleged that Galasso et al., Booth et al., and Holko teach the features of claim 1, and that Hanzawa et al. further teaches a temperature of 1100°C-1400°C and a pressure of 0.1-10 hPa, which corresponds to 75 mTorr-7500 mTorr. Applicants respectfully traverse.

Claim 5 has been canceled. Therefore, Applicants respectfully request that the rejection of claim 5 under 35 U.S.C. § 103(a) be removed. Amended claim 1 now recites the features of claim 5. Since the features of claim 5 have been incorporated into claim 1, Applicants provide herewith arguments for the patentability of amended claim 1.

A. The cited documents do not teach oxidizing the Si layer to form an SiO_2 film

As discussed above, Galasso et al., Booth et al., and Holko do not teach oxidizing the Si layer to form an SiO_2 layer. Hanzawa et al. does not cure this deficiency. Thus, even a combination of Galasso et al., Booth et al., Holko, and Hanzawa et al. does not teach each and every element of amended claim 1. For at least the above reason, amended claim 1 is not obvious in view of Galasso et al., Booth et al., Holko, and Hanzawa et al.

B. Unexpected results commensurate with the scope of claim 1 have been demonstrated

Even if, *arguendo*, the claims are *prima facie* obvious over the cited combination of references, Applicants have demonstrated unexpected results that are commensurate with the scope of the present claims.

In the Declaration Under 37 C.F.R. § 1.132, filed herewith, Applicants have demonstrated the critical nature of the temperature range as found in amended claim 1. Specifically, Applicants have demonstrated that a heat treating temperature of 1400 °C is sufficient to promote the uniform coating of Si on the carbon/carbon composites. See, e.g., Figs. 2 and 3 of the Declaration. Temperatures lower than 1400 °C are insufficient

to melt the Si particles to uniformly cover the composites. See, e.g., Fig. 1 of the Declaration. Temperatures above 1600 °C are less economical due to the costs associated with increased temperatures. Due to the critical nature of the claimed temperature range, claim 1 is not obvious in view of Galasso et al., Booth et al., Holko, and Hanzawa et al.

C. The temperature ranges in claim 1 is not anticipated by the cited documents

The Examiner has alleged that Hanzawa teaches the temperature of 1100 °C-1400 °C and a pressure of 75 mTorr-7500 mTorr. The Examiner further alleged that it is has been held that a *prima facie* case of obviousness exist where the claimed range "overlap or lie inside ranges disclosed by the prior art." Applicants respectfully traverse the Examiner's characterization of ranges of the cited document, as well as the applicable law.

Contrary to the Examiner's allegation, disclosure of a range does not constitute a specific disclosure of the *endpoints* of that range. See, e.g., *Atofina v. Great Lakes Chemical Corp.* 441 F.3d 991 (emphasis added). The disclosure of a range is only "that of a range, not a specific temperature in that range, and the disclosure of a range is no more a disclosure of the end points of the range than it is of each of the intermediate points." *Id.* at 1000. Additionally, even if there is slight overlap, no reasonable fact finder can determine that the overlap describes the entire claimed range with sufficient specificity to anticipate the range recited in the claim. See *Id.* at 1000.

The described *range* of Hanzawa is 1100 °C to 1400 °C. The claimed *range* in amended claim 1 is 1400 °C to about 1600 °C. Disclosure of the numerical value

"1400 °C" as an endpoint in Hanzawa discloses part of a range, but does not disclose a specific temperature in that range. Thus, there is no overlap of ranges between Hanzawa and the present invention. Thus, the temperature range element of the claim is not anticipated by the cited documents. For the reasons stated above, the temperature range is also not obvious in light of the cited documents. For at least the above reason, amended claim 1 is not anticipated or obvious in view of Galasso et al., Booth et al., Holko, and Hanzawa et al.

Double Patenting

Claims 1 and 4-6 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4-6 of copending U.S. Appl. No. 10/767,858 in view of Galasso et al. Applicants had previously requested that the rejection be held in abeyance until the remaining issues had been resolved. The Examiner did not accept Applicants' reason for abeyance, stating "applicant has not asserted reasoning why the rejection are not proper." Office Action, pg 5, ¶3.

A provisional double patenting rejection is proper when the "rejections are applied to copending applications *having different effective filing dates* wherein each application has a common assignee or a common inventor." MPEP 706.02(k), pg. 700-49, 1st col., last ¶ (emphasis added). The double patenting rejection "should be made in the *later* filed application." MPEP 706.02(k), pg. 700-49, 1st col., 2nd ¶ (emphasis added). However, in the present provisional double patenting rejection, both the present application and copending U.S. Appl. No. 10/767,858 have the same effective filing

date, January 30, 2004. Since both applications have the same effective filing date, Applicants submit that the present double patenting rejection is improper. Therefore, Applicants request that the double patenting rejection be withdrawn.

If, however, the Examiner maintains her provisional double patenting rejection, Applicants request that rejection of claims 1 and 4-6 be held in abeyance until at least one application has been allowed. Applicants note that both applications involved in the double patenting rejection are currently pending. The claims of both applications have been previously amended, and some cancelled, throughout prosecution of the two applications. At this point, the Examiner has not allowed any claims in either application. The final constitution of any allowed claims is unknown. Therefore, it is Applicants' position that a terminal disclaimer would be premature at this time, since a terminal disclaimer may not be required if claims are changed substantially. However, upon allowance of either application, Applicants will consider submitting a terminal disclaimer if required.

Conclusion

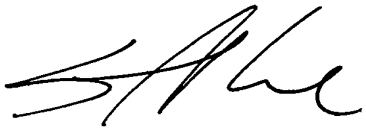
All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will

expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



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